



RUPERT URSIN 'Quantum experiments at the Canary Islands'

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September 10, 2010

Seminar, September 10, 2010, 11:00. Seminar Room

RUPERT URSIN

IQOQI - Institute for Quantum Optics and Quantum Information

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We performed several experiments between the Island of La Palma and Tenerife over the years. I will present not only the known results on the successful distribution of entangled photons violating Bell's inequality as well as the applications one could make use out of. But also the implementation of a freedom-of-choice experiment Bell experiment, where the setting was not only independent from the respective observers, but also from the emission

of the entangled photons. The latter closes a certain class of local loopholes we managed to close for the first time [1]. Additionally I will present a non-local quantum erasure experiment based on a delay's choice we recently performed on the canaries [2], very much what Wheeler had in mind [3]. Last but not least I will present the so called European "Space-QUEST" proposal and ongoing ESA funded projects for the qualification of space-proofed hardware and what this has to do with the Canaries.

[1] Th. Scheidl et al., arXiv:0811.3129v1 [quant-ph]

[2] manuscript in preparation

[3] John Archibald Wheeler, "The 'Past' and the 'Delayed-Choice' Double-Slit Experiment", in Mathematical Foundations of Quantum Theory, edited by A.R. Marlow, p. 13.).

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Hosted by Prof. Valerio Pruneri